**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Pursell, Gary
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-000258
**Date Inspected:** 07-Jul-2007

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

**OSM Arrival Time:** 800
**OSM Departure Time:** 1730
**Location:** Shanghai, China

**CWI Name:** Lu Jian Hua

**CWI Present:** ☑ Yes ☐ No

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inspected CWI report:** | ☐ | Yes | ☑ | No | ☐ | N/A | **Rod Oven in Use:** | ☐ | Yes | ☐ | No | ☑ | N/A |
| **Electrode to specification:** | ☐ | Yes | ☐ | No | ☑ | N/A | **Weld Procedures Followed:** | ☐ | Yes | ☐ | No | ☑ | N/A |
| **Qualified Welders:** | ☐ | Yes | ☐ | No | ☑ | N/A | **Verified Joint Fit-up:** | ☐ | Yes | ☐ | No | ☑ | N/A |
| **Approved Drawings:** | ☐ | Yes | ☐ | No | ☑ | N/A | **Approved WPS:** | ☐ | Yes | ☐ | No | ☑ | N/A |
| | | | | | | | **Delayed / Cancelled:** | ☐ | Yes | ☑ | No | ☐ | N/A |

**Bridge No:** 34-0006
**Component:** Thermal Cutting of Steel Plates

**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Robert Cuellar is present at the fabrication facility of Zenhua Port Machinery Company (ZPMC)., LTD for the purpose of monitoring activities relative to the subsequent fabrication of the SFOBB Self Anchored Suspension Bridge. Also present are Caltrans OSM representatives, Mr. Dave McClary and Mr. Alfredo Acuna. Only observations by QA Inspector Robert Cuellar are being recorded within this report as follows,

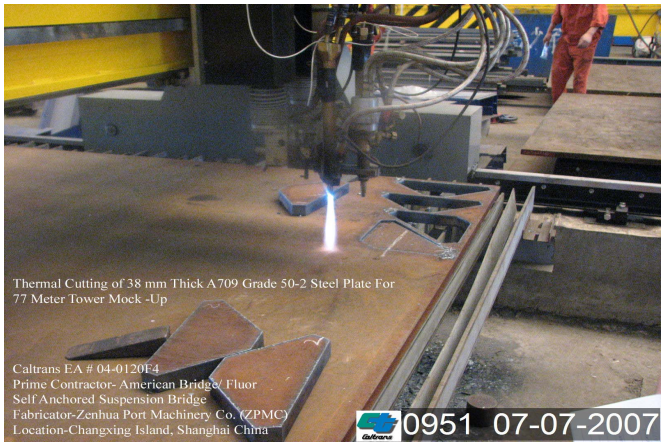
Tower 77 Meter Mock-Up Thermal Cutting of Steel Plate

The Caltrans QA Inspector was present along with ABF representative Mr. Jeff Evans, ZPMC representative Mr. Lay Tao and numerous other ZPMC representatives that are located within the thermal cutting area. ZPMC presented the Caltrans QA Inspector with a cut sheet that reflects the steel pieces to be thermally cut, type of steel plate material and grade, piece numbers and quantities for a thirty-eight (38) millimeter thick plate and also a seventy-five (75) millimeter thick steel plate.

| Item | Description | WBS | Dwg No. | Status |
|---|---|---|---|---|
| 1 | 38 mm Thick A709 Grade 50-2 Steel Plate | N/A | N/A | N/A |

The Caltrans QA Inspector observed the plate identification markings for this plate and identified a heat number of 06104405010102. The Caltrans QA Inspector also observed a Caltrans QA OSM distinguishing mark that identifies that this steel plate has been previously observed and verified by Caltrans OSM Inspector's on-site. The Caltrans QA Inspector observed that ZPMC is utilizing computer numeric controlled (CNC) equipment for the thermal cutting. The Caltrans QA Inspector was informed after some exchange of interpretation by several ZPMC representatives that the thermal cutting gases being used consist of oxygen and propane. Upon verification of the steel plate heat number, ZPMC proceeded with the thermal cutting of four gusset plates. At the completion of the thermal cutting the Caltrans

QA Inspector observed that the thermally cut steel plates have smooth and regular surfaces that are notch free and that appear to comply with AWS D1.5 (2002) section 3.2.3. Included below are digital pictures of this observation.





2 75 mm Thick A 709 Grade 50-2 Steel Plate N/A N/A N/A

The Caltrans QA Inspector observed that the presented 75 millimeter thick steel plate contains a thick layer of rust and heavy mill scale. The Caltrans QA Inspector brought it to the attention of ZPMC and ABF representative Mr. Jeff Evans that the traceability identification markings for the steel plate are unlegible. There was a significant effort by ZPMC representatives and Mr. Jeff Evans to locate the steel mill steel stenciled identification heat number. This steel stenciled heat number was located, however was extremely difficult to read. Mr. Jeff Evans and ZPMC utilized manually applied wire brushing and also the application of water and manual scrubbing using rags to enhance the steel stenciled heat number. An artificial powered light was also utilized to identify the steel heat number. After a period of time, the Caltrans QA Inspector observed with the ABF and ZPMC representatives a heat number that was barely legible. This heat number was recorded as 6206259N. The Caltrans QA Inspector was not present for the thermal cutting of this plate that occurred after the QA Inspector departed. Included below is a digital picture of this observation.


3 Tower 77 Meter Mock-Up Thermally Cut Steel Plate N/A N/A N/A

Tower 77 Meter Mock-Up Thermally Cut Steel Plate

The Caltrans QA Inspector observed that ZPMC has started to stack several thermally cut steel plates of various sizes in an area adjacent to the CNC thermal cutting device. Included below is a digital picture of this observation.


| | | | | |
|---|---|---|---|---|
| 4 | ZPMC Internal Practice Welding of Tower Mock-Up Sub Assemblies | N/A | N/A | N/A |

ZPMC-Internal Practice Welding of Tower Mock-Up Sub-Assemblies

The Caltrans QA Inspector observed that there are numerous ZPMC welders at various locations of the tower mock-up fabrication area that are welding on various tower mock-up sub-assemblies that ZPMC is utilizing as informational practice purposes. Included below is a digital picture of ZPMC welders that are using a flux cored arc welding machine to weld a double bevel groove weld in a tee joint configuration.


| | | | | |
|---|---|---|---|---|
| 5 | ABF-89 Meter Mock-UP | N/A | N/A | N/A |

ABF-89 Meter Mock-Up

The Caltrans QA Inspector periodically observed that there are approximately ten (10) to fifteen (15) ZPMC workers that are grinding and welding and also monitoring work on the upper section of a skin plate. These ZPMC workers included welders and quality control personnel. Included below is a digital picture of this observation.


| | | | | |
|---|---|---|---|---|
| 6 | ABF-114 Meter Mock-Up | N/A | N/A | N/A |

ABF-114 Meter Mock-Up

The Caltrans QA Inspector periodically observed that there are approximately five to ten (10) ZPMC workers that are performing dimensional measurements and also are grinding various surfaces of the stiffener bolt connection splices. Included below is a digital picture of this observation.


| | | | | |
|---|---|---|---|---|
| 7 | ZPMC-OBG-Panel Welding and Fit-Up Jig Station | N/A | N/A | N/A |

ZPMC-OBG-Panel Welding and Fit-Up Jig Station

The Caltrans QA Inspector observed that there are approximately 15-20 workers that are performing various functions to the orthotropic box girder panel fit-up jig. The Caltrans QA Inspector observed that ZPMC is modifying the transverse cambering supports for the fit-up jig. Some of these transverse cambering supports are being removed and replaced. Included below is a digital picture of this observation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|---|---|---|---|---|
| 8 | ZPMC-New Tower Fabrication Area Bays | N/A | N/A | N/A |

ZPMC-New Tower Fabrication Area Bays

The Caltrans QA Inspector observed that ZPMC has positioned cranes within the new tower fabrication bays that are being fabricated for the construction of the tower sub-assemblies. Included below is a digital picture of this observation.


**Summary of Conversations:**

1) ZPMC representative Mr. Lu Jian Hua informed the Caltrans QA Inspector that the scheduled welder, welding operator qualification testing for today is being cancelled due to the Moody Certified Welding Inspector Mr. Zhou Daging being hospitalized for an illness. 2) ZPMC representative Mr. Lay Tao voiced that ZPMC is wanting to blast and primer coat the Caltrans 77 meter mock up sub-assembly components that are currently being thermally cut. This item was brought to the attention of Mr. Jeff Evans of ABF who responded that he would not allow ZPMC to proceed with this request until such item has been addressed formally with Caltrans on-site during the daily scheduled meetings. 3) Other items are as identified within this report.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

# WELDING INSPECTION REPORT

*( Continued Page 6 of 6 )*

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|---|---|---|
| **Inspected By:** | Cuellar,Robert | Quality Assurance Inspector |
| **Reviewed By:** | McClary,David | QA Reviewer |